

## MAKING YOUR OWN INKS AND PIGMENTS

by Mistress Stella Silvana

In medieval times, you couldn't go out to the arts supply store and buy paints ready to use. Artisans needed to know how to make their own pigments and inks. Many of the chemicals used by medieval artists to make pigments are very toxic, such as lead, mercury, and arsenic. I would not recommend that hobbyists try to duplicate these pigments. There are many that can be safely made and used.

There is a difference between a dye and a pigment. Pigments are opaque particles of color that need a carrier or medium to "glue" them in place on the painting. Some of the binders used historically were:

Glair (egg white) - the most common binder used for manuscript illumination.

Gum - Gum arabic, cherry gum and other resins from tree sap were used.

Egg yolk - this is the medium that we refer to as "tempera paint".

Gesso and plaster - in "frescoes" the pigments were applied directly to fresh plaster walls.

Linseed oil - this is the basis of "oil paint" where the pigment is bound by the drying linseed oil.

Encaustic - pigments bound in wax. Used by Coptic and Roman artists.

Dyes are colors that bind chemically with fibers, so they do not need a medium or carrier to keep them in place. Dyes are sensitive to light, so they fade, while mineral pigments don't fade. Many dyes can be used to make "lake" pigments. Lake pigments can be made by dyeing ground up egg shells, or by mixing a mordant such as alum with a dye bath. The resulting precipitate, once added to a binder such as glair, is a ready made paint that can be used as is. Some of the dyes used historically to make pigments are: madder, brasilwood, kermes, indigo, saffron, and folium.

To make pigments from minerals, you find a rock with a pretty color and crush it with a hammer until it is small enough to grind in a mortar, then a final grinding is done on a marble tile. Earth colors such as Sienna (from near the city of Sienna) are clays that are ground up and used for pigment. Burnt Sienna is the same clay fired until it has a dark color. Ultramarine is ground up lapis lazuli, a blue mineral. Azurite and malachite can be used in the same way.

Once the pigment is ground, the particles may be sized by a process called levigation. The pigments are shaken in a jar with water. The larger particles settle to the bottom, then the smaller particles may be poured off and allowed to settle in another container.

Some recipes for medieval pigments-

This first list is historical pigments that are POISONOUS! Do not try these at home!

Cinnabar/vermillion - Red. Mercury sulphide, made by cooking mercury and sulphur.

Ceruse - White lead made by oxidizing lead plates.

Massicot - Yellow. White lead cooked until it is yellow.

Minium - Red lead, made by cooking white lead until it is red.

Realgar - Orange-red. Arsenic sulphide.

Historical pigments that may safely be made and used-

Rubeum - Red iron oxide.

Ocher - Natural yellow earth.

Burnt Ocher - Ocher fired until it becomes dark.

Saffron - Yellow used as wash or for lakes.

Verdigris - Green. Copper acetate. Made by exposing copper to acid.

Carmine - Red, probably from Kermes. Used as a lake. Similar colors may be made from cochineal, brasilwood and madder.

Ultramarine - Blue. Ground up lapis lazuli

## Making Your Own Inks and Pigments

Folium/turnsole - *Crotophora tinctoria*. Berries whose juice is purple when acid and blue when alkaline.

Azure - Blue, ground up azurite.

Malachite - Ground up for green pigments.

Black ink can be made from lampblack with a gum binder. Another type of ink may be made from tannin and ferrous sulfate, such as by soaking oak galls and then mixing in a solution of ferrous sulphate.

For more information see-

Alexander, Jonathan J. G. *Medieval Illuminators and Their Methods of Work*. Yale University Press, New Haven and London, 1992.

Cennini, Cennino. (David Thompson, translator) *The Craftsman's Handbook*. Dover Publications, N.Y. 1960.

Child, Heather (ed.). *The Calligrapher's Handbook*. Taplinger Publishing Company, N.Y. 1986.

De Hamel, Christopher. *A History of Illuminated Manuscripts*. Phaidon Press, Ltd. London, 1994.

Theophilus. *On Divers Arts*. (John Hawthorne and Cyril Smith translators) Dover Publications, N.Y. 1979.

Thompson, Daniel V. *The Materials and Techniques of Medieval Painting*. Dover Publications, N.Y. 1956.